



Broad College of Business
MICHIGAN STATE UNIVERSITY



Digital Strategy

Computers and Accessories

Team 6

May 3, 2023

WHO WILL MAKE
BUSINESS HAPPEN?
SPARTANS WILL.

Team 6



MS BUSINESS DATA SCIENCE AND ANALYTICS



**Sandeep
Kumar**



**Suhas
Sundar**



**Mounika
Yallamandhala**



**Greg
Gibson**



**Sriya
Kondabathula**



Broad College of Business
MICHIGAN STATE UNIVERSITY

Agenda

- **Introduction**
- **Data Overview**
- **Key Insights**
- **Strategic Approach**
- **Recommendations**



Introduction

Background

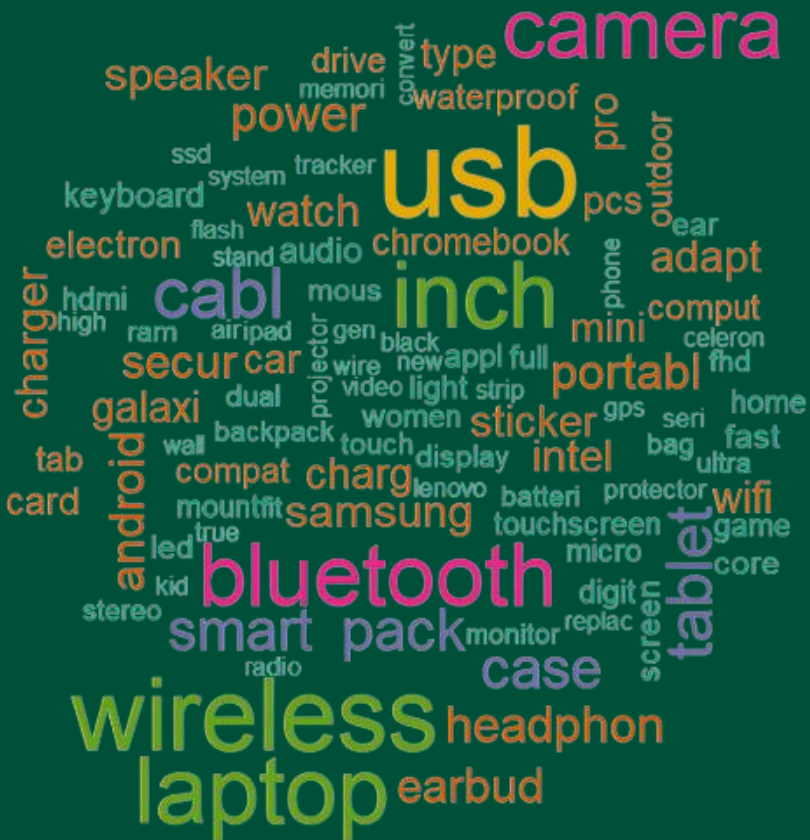
- Behavioral customer details through app, web, media, visits and social media data
- Digital strategies to be executed for Computer & Accessories category
- Create strategic priority to increase digital transactions
- Category-specific best-practice through the year

Goals

- Optimize Digital strategy
- Analyse customers' purchase behaviour
- Analysing search terms used by customers
- Purchase in-app journey
- Pre-purchase activity and targeted advertising



Data Overview



Data Exploration

Overview

- Category chosen – Computers and Accessories
- Total Number of users under the category – 4,525
- Number of purchases – 458
- Time period – Oct'22 to Feb'23

Data Cleaning

- Products under Electronics category along with relevant products from other categories selected
- Process all files for App and Web data, and create relational tables by combining with Shopper
- Standardizing text such as domain names and categories

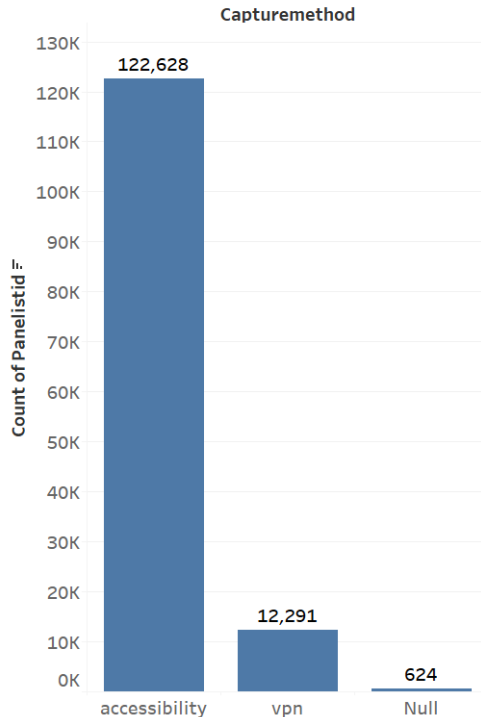
Assumptions

- Only userbase with all tracking enabled considered
- Behavior analysis is performed based on activity 6 hours prior to a purchase
- UTC time is considered for all analysis

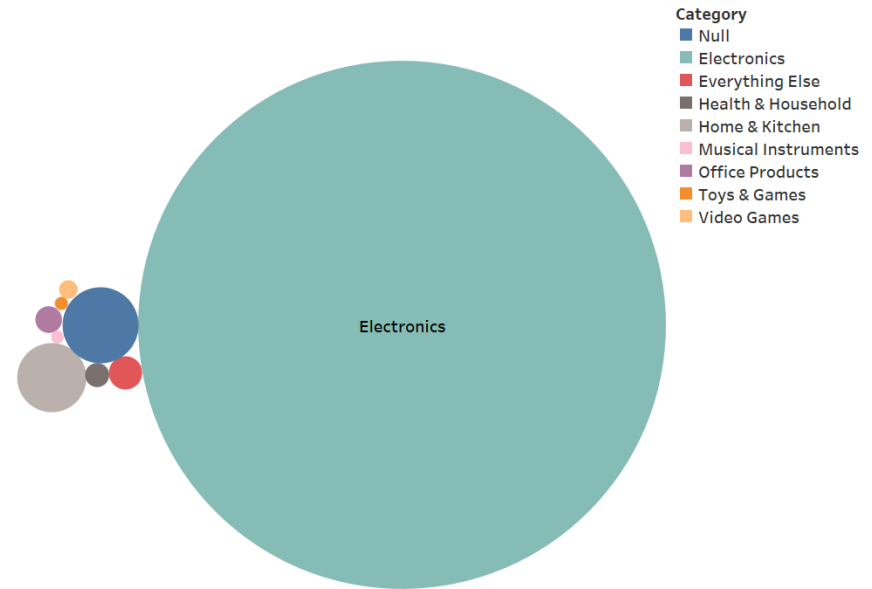


Lead Capture Method and Categories Shopped

Capture Method by Panelistid



- Almost 10x more captures by accessibility than VPN



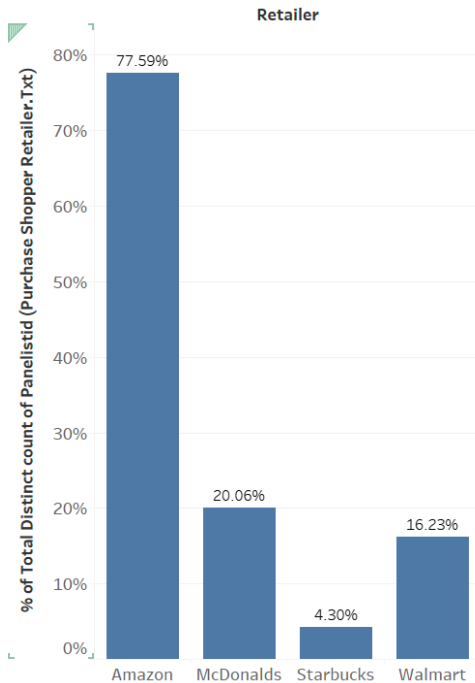
Category. Size shows count of Panelists. The view is filtered on count of Panelists, which ranges from 50 to 129k

- Over 95% of shopping activity for Computers and Accessories falls under the Electronics category



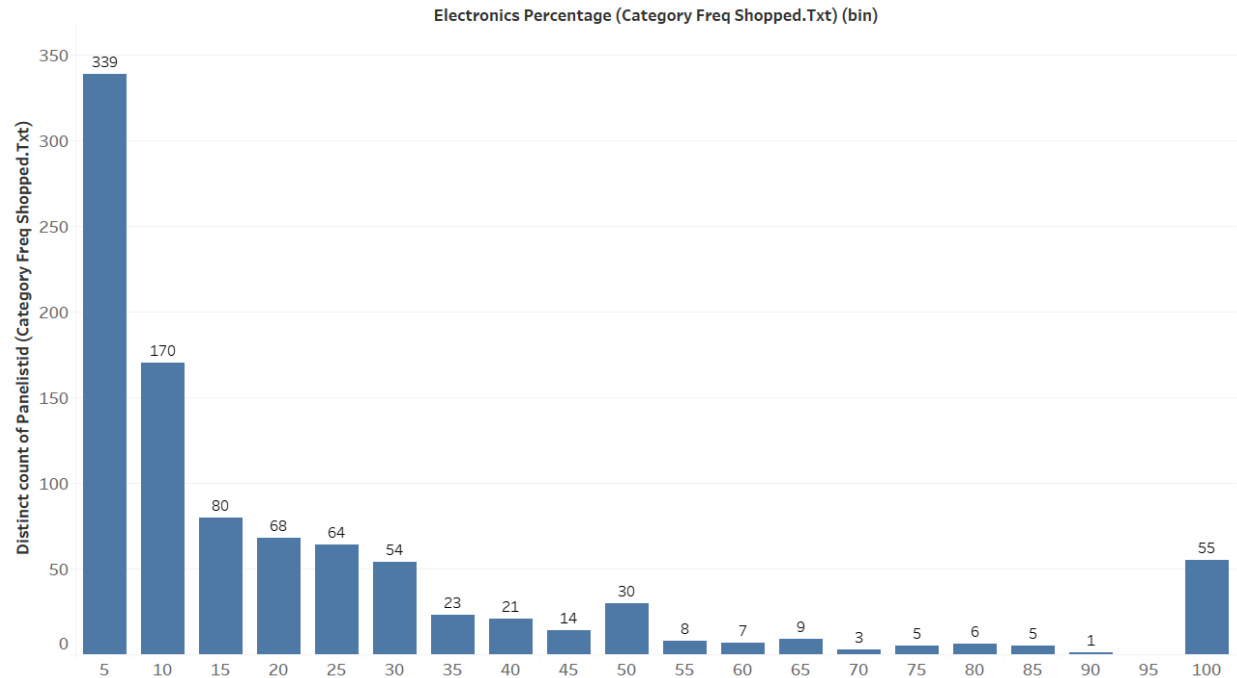
Shopping Activity

Retailer share



- Amazon Leads retailers by a large margin
- The next “true” retailer only represents 16% of the data

Electronics % share



- 6% of panelists only shopped products within Electronics; Albeit low purchase count

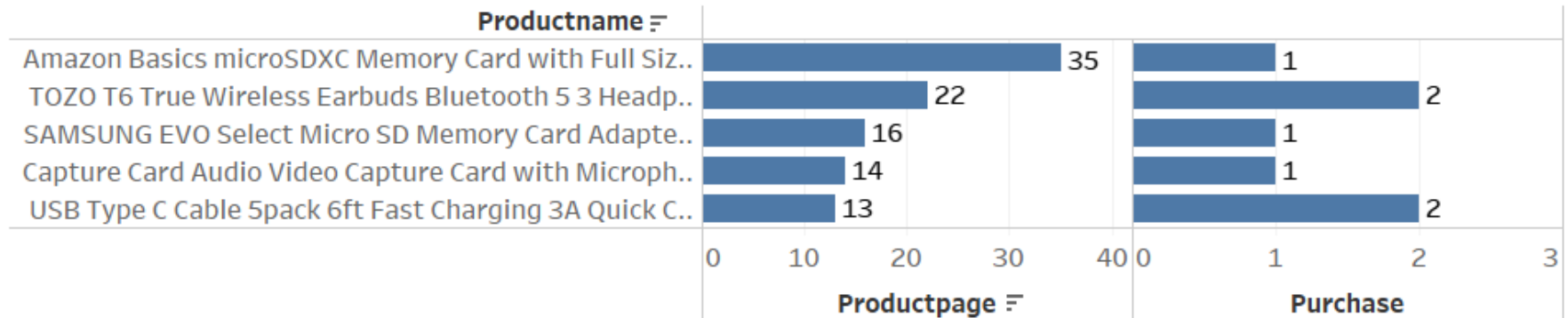


Key Insights

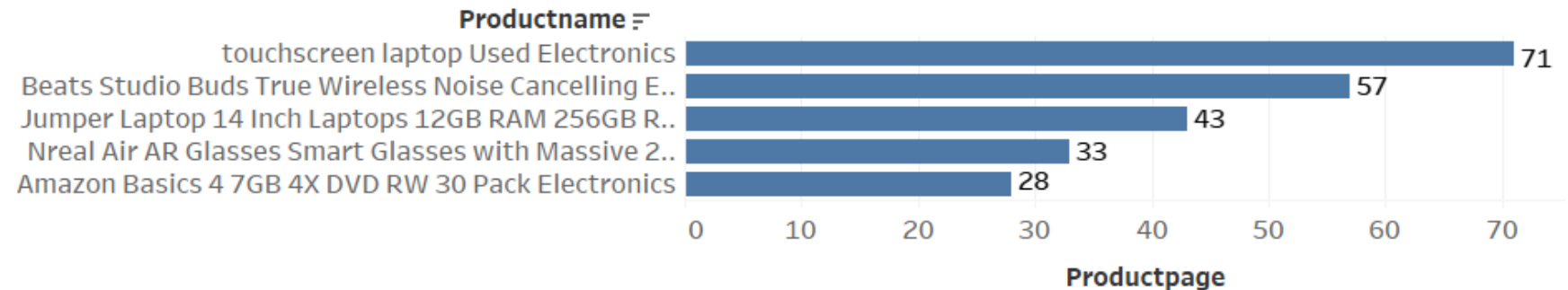


Top Products Analysis on Event Type

Top products viewed and purchased



Top Products viewed but not purchased



- Used Electronics is the highest product category that was viewed without any purchases



Purchase Journey

Sequence

Product Page View > Product Page View > Product Page View > Purchase	1
Product Page View > Product Page View > Product Page View > Purchase > Product Page View	1

Product Page View > Product Page View > Purchase > Product Page View > Product Page View > Add to Basket > Product Page View > Product Page View >
Product Page View > Product Page View > Add to Basket > Product Page View > Product Page View > Add to Basket > Product Page View > Product Page View >
Product Page View > Product Page View > Product Page View > Add to Basket > Product Page View > Product Page View > Product Page View > Add to Basket >
Product Page View > Add to Basket > Product Page View > Add to Basket > Product Page View > Add to Basket > Product Page View > Add to Basket > Product
Page View > Add to Basket > Product Page View > Add to Basket > Product Page View > Product Page View > Product Page View > Product Page View > Product
Page View > Add to Basket > Product Page View > Product Page View > Product Page View > Add to Basket > Product Page View > Product Page View > Add to
Basket > Product Page View > Product Page View > Product Page View > Product Page View

- For journeys ending with a Purchase, the journey was unique to individual sessions and panelists. Hence, any user-based suggestions need to be tailor made for each user

Shopper Journey

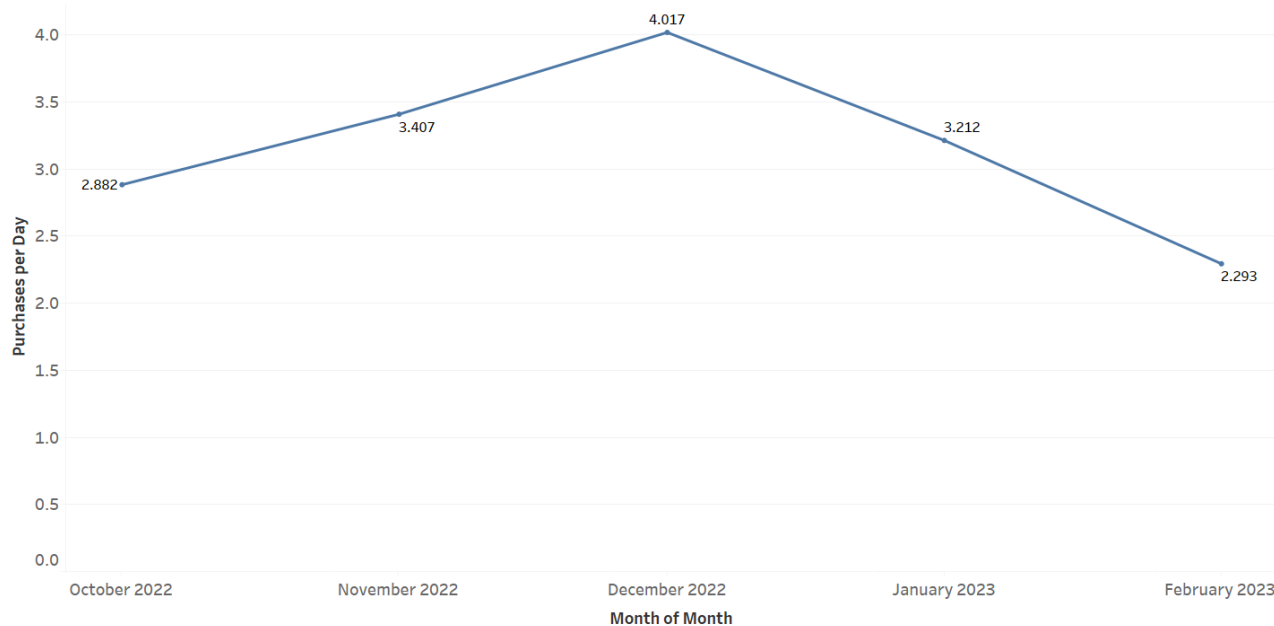
Sequence

Product Page View	225
Product Page View > Product Page View	106
Product Page View > Product Page View > Product Page View	63
Product Page View > Product Page View > Product Page View > Product Page View	51
Product Page View > Product Page View > Product Page View > Product Page View > Product Page View > Product Page View	27

- Product Page View not followed up with other events in several sessions



Purchase Frequency



- Purchase frequency is maximum in the month of December potentially driven by the holiday season

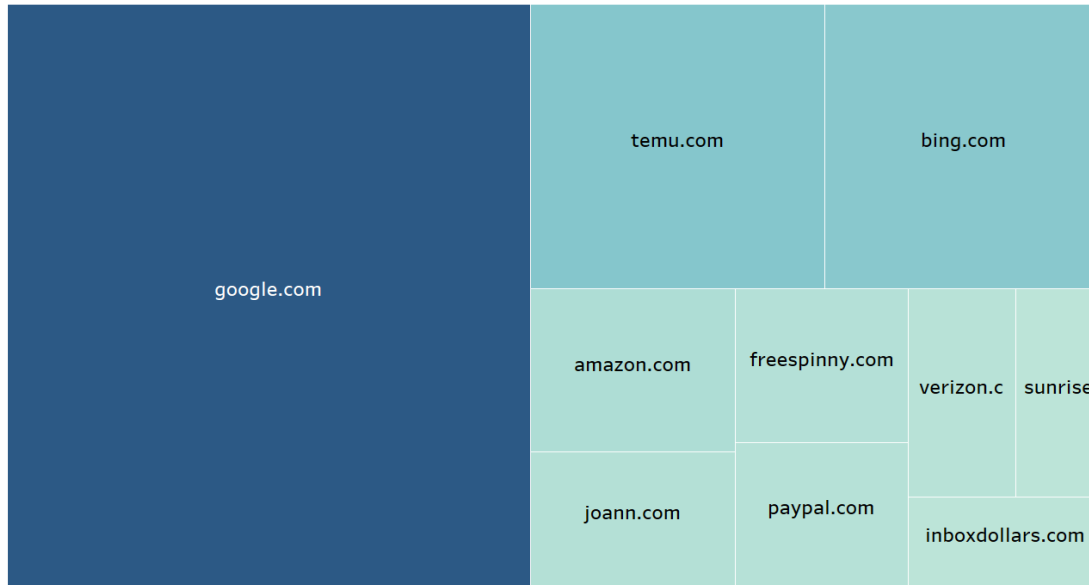
Re-Purchase Analysis:

Average time difference for a specific user to repurchase any product within the Computer and Accessories category is 11 days

Around 31% of customers who purchased a product in this category made a re-purchase in the overall time frame



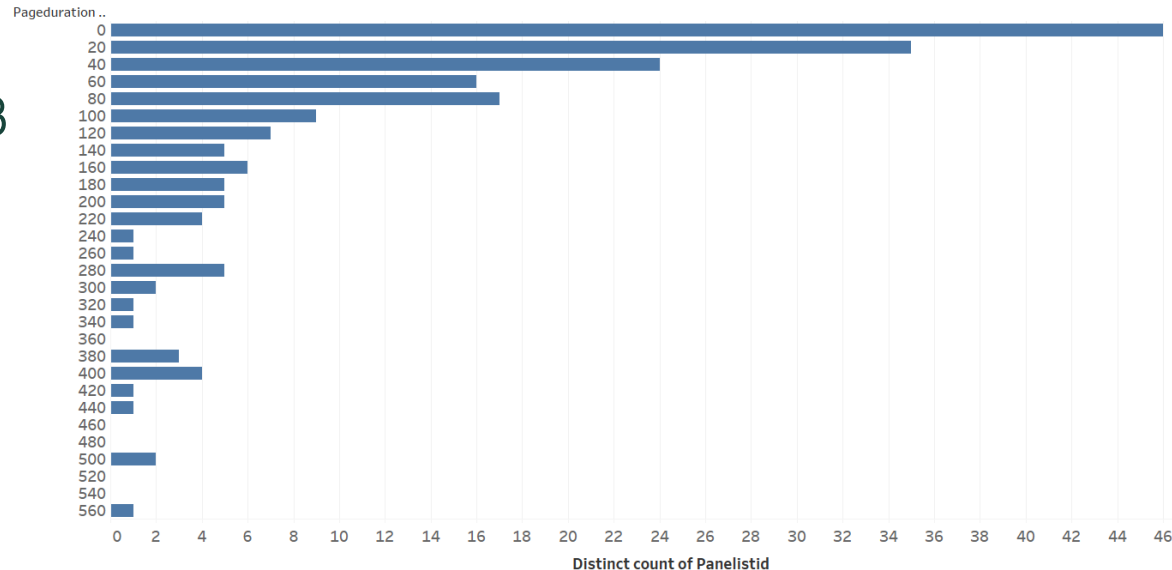
Domain Frequency



- Google, Temu, Bing and Amazon.com are the largest domains visited by panelists within the 6 hour window prior to making a purchase

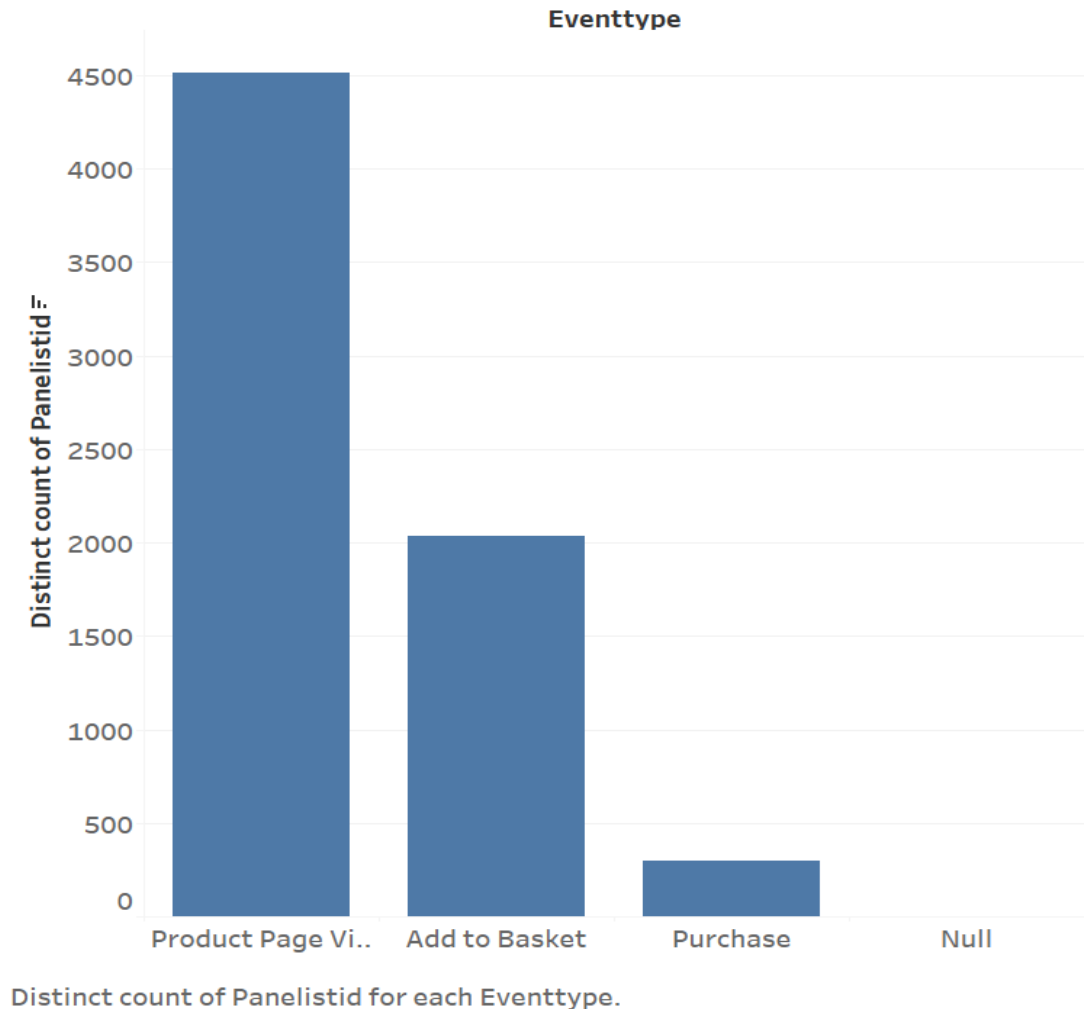
Page Duration

- On average, panelists spend 43 seconds on the web

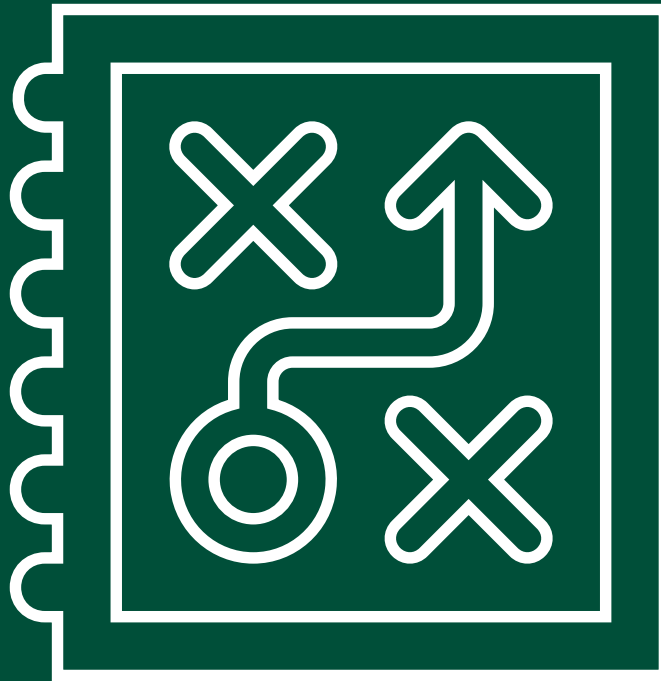


Overall Conversation Rate

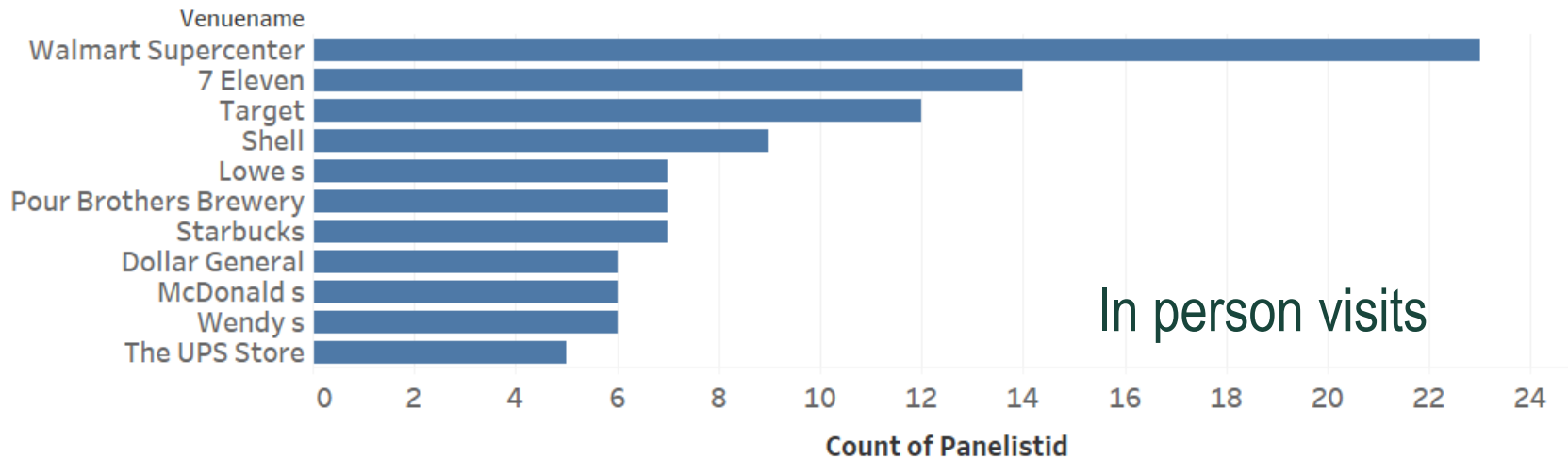
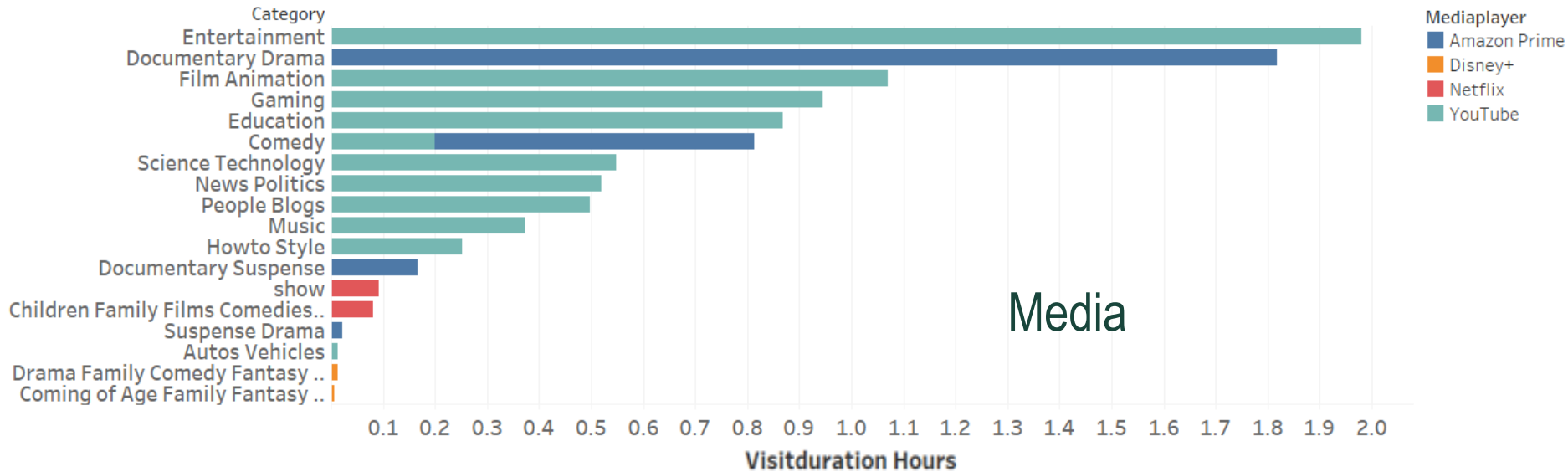
- From 4,516 page views, 2,037 added a product to basket and only 297 purchased a product
- This represents a conversation rate of 6.57%
- Industry Average for ecommerce is 2.5-3%



Strategic Approach

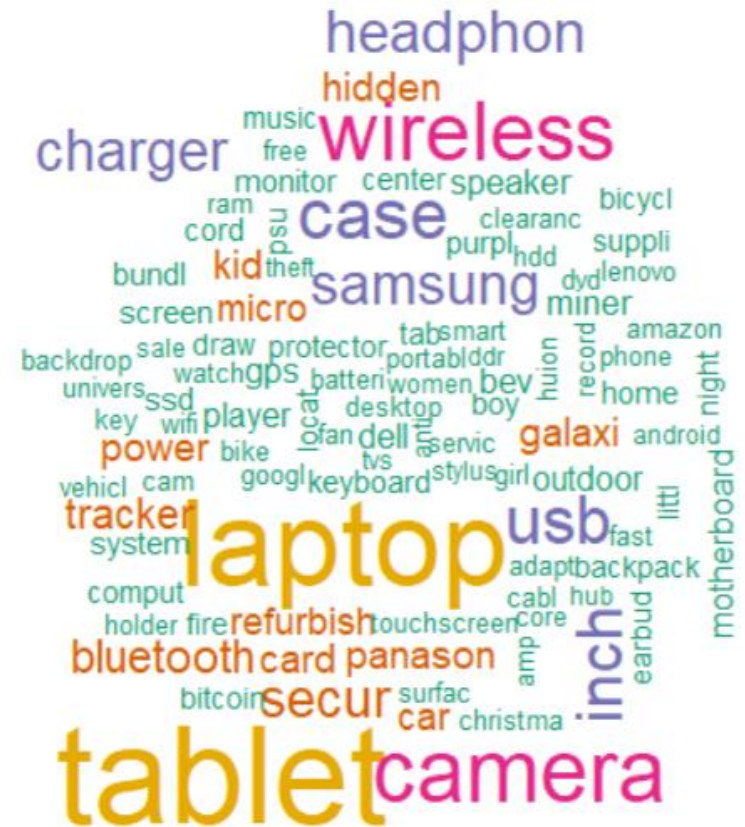


Pre-purchase Activity Driven Ad Insights

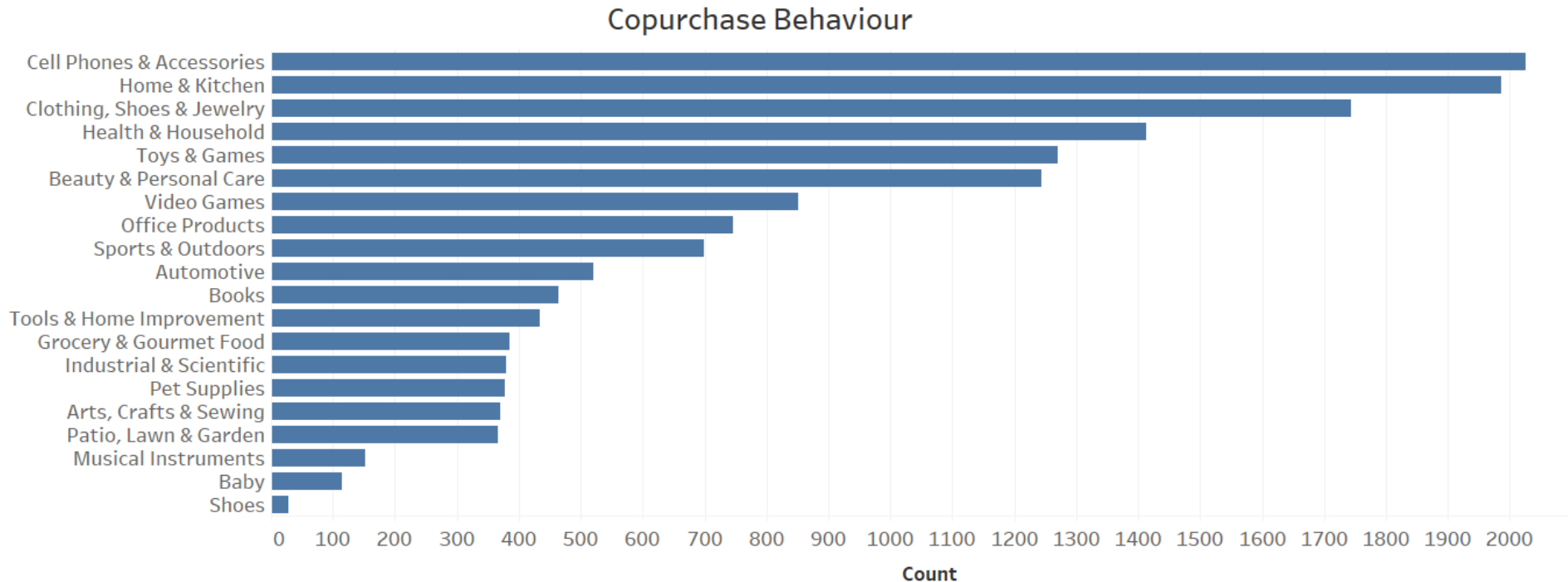


Search Term Textual Analysis (Within Amazon App)

- Search engine recommendation optimization
- App Store Optimization
- Posting on outreach channels based on higher frequency words searched by panelists on the app
- Inventory management recommendations for Amazon warehouses



Co-purchase Trends



- Co-purchase behavior is the tendency of customers to purchase certain products together.
- Used to make personalized recommendations at the product-bag stage, leading to increased sales and customer satisfaction.



Recommendations



Use targeted advertising to drive pre-purchase activity.



Leverage User search behavior to optimize digital marketing outreach, search engine recommendation, inventory management.



Conduct seasonal analysis and adjust ad frequency to maximize ROI.



Utilize co-purchase behavior to make cross-category recommendations at the product-bag stage

Regularly revisit and update digital strategies based on changes or trends to maintain a competitive edge and drive sales growth.



Questions



Summary

Data Exploration

Overview

Category chosen – Computers and Accessories
Total Number of users under the category – 4,525
Number of purchases – 458
Time period – Oct'22 to Feb'23

Data Cleaning

Products under Electronics category along with relevant products from other categories selected
Process all files for App and Web data, and create relational tables by combining with Shopper
Standardizing text such as domain names and categories

Assumptions

Only userbase with all tracking enabled considered
Behavior analysis is performed based on activity 6 hours prior to a purchase
UTC time is considered for all analysis

Broad College of Business
MICHIGAN STATE UNIVERSITY

Lead Capture Method and Categories Shopped

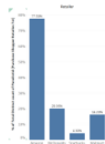


- Almost 10x more captures by accessibility than VPN
- Over 95% of shopping activity for Computers and Accessories falls under the Electronics category

Broad College of Business
MICHIGAN STATE UNIVERSITY

Shopping Activity

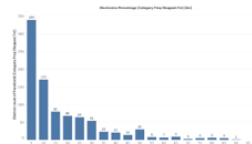
Retailer share



- Amazon Leads retailers by a large margin
- The next "true" retailer only represents 16% of the data

Broad College of Business
MICHIGAN STATE UNIVERSITY

Electronics % share

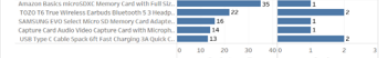


- 6% of panelists only shopped products within Electronics; Abset low purchase count

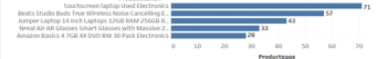
Broad College of Business
MICHIGAN STATE UNIVERSITY

Top Products Analysis on Event Type

Top products viewed and purchased



Top Products viewed but not purchased



- Used Electronics is the highest product category that was viewed without any purchases

Broad College of Business
MICHIGAN STATE UNIVERSITY

Purchase Journey



Shopper Journey



- Product Page View not followed up with other events in several sessions

Broad College of Business
MICHIGAN STATE UNIVERSITY

Purchase Frequency

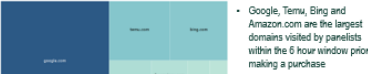


Re-Purchase Analysis:
Average time difference for a specific user to repurchase any product within the Computer and Accessories category is 11 days

Around 31% of customers who purchased a product in this category made a re-purchase in the overall time frame

Broad College of Business
MICHIGAN STATE UNIVERSITY

Domain Frequency

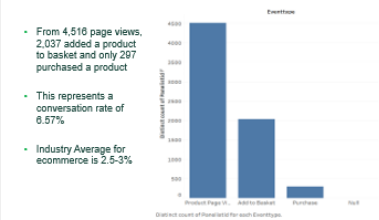


- Google, Term, Bing and Amazon.com are the largest domains visited by panelists within the 6 hour window prior to making a purchase

On average, panelists spend 43 seconds on the web

Broad College of Business
MICHIGAN STATE UNIVERSITY

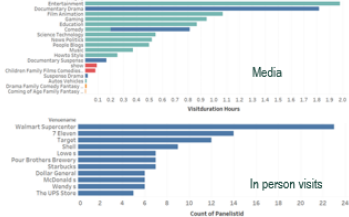
Overall Conversation Rate



- From 4,516 page views, 2,037 added a product to basket and only 297 purchased a product
- This represents a conversation rate of 0.57%
- Industry Average for ecommerce is 2.5-3%

Broad College of Business
MICHIGAN STATE UNIVERSITY

Pre-purchase Activity Driven Ad Insights



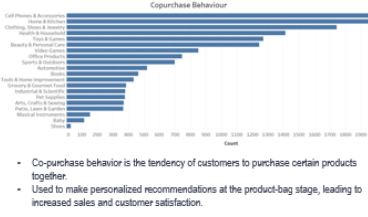
Broad College of Business
MICHIGAN STATE UNIVERSITY

Search Term Textual Analysis (Within Amazon App)

- Search engine recommendation optimization
- App Store Optimization
- Posting on outreach channels based on higher frequency words searched by panelists on the app
- Inventory management recommendations for Amazon warehouses

Broad College of Business
MICHIGAN STATE UNIVERSITY

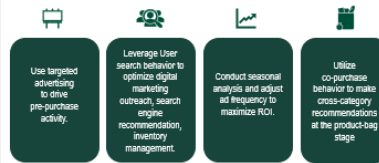
Co-purchase Trends



- Co-purchase behavior is the tendency of customers to purchase certain products together.
- Used to make personalized recommendations at the product-bag stage, leading to increased sales and customer satisfaction.

Broad College of Business
MICHIGAN STATE UNIVERSITY

Recommendations



Regularly revisit and update digital strategies based on changes or trends to maintain a competitive edge and drive sales growth.

Broad College of Business
MICHIGAN STATE UNIVERSITY



Broad College of Business
MICHIGAN STATE UNIVERSITY

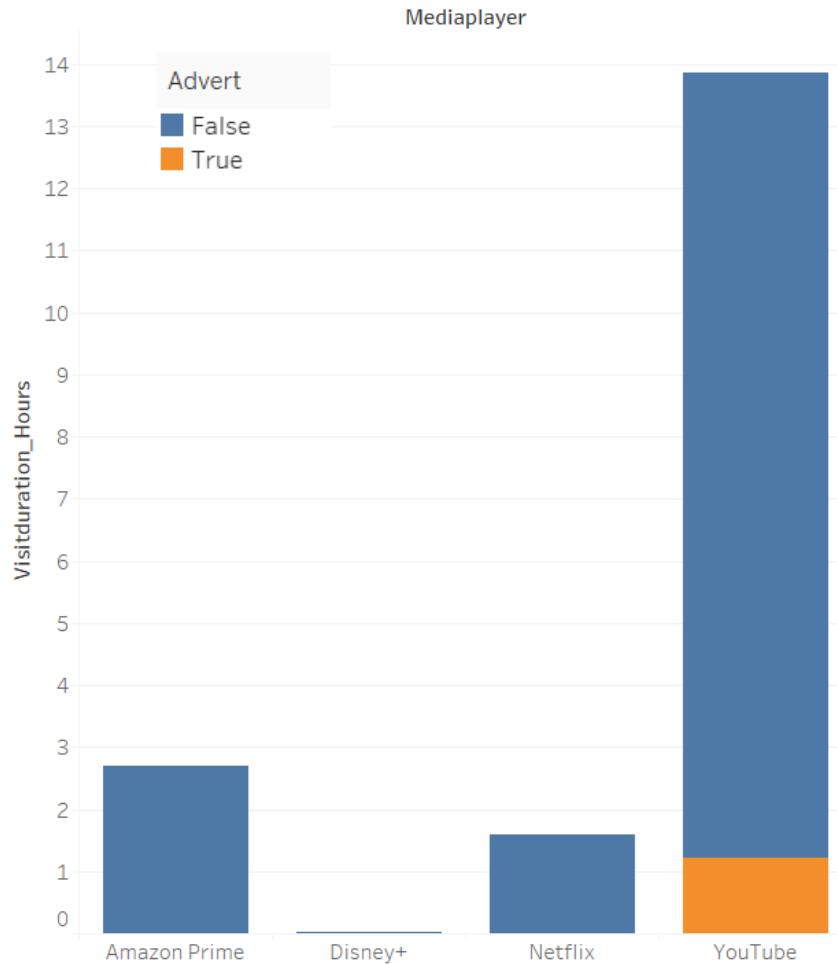
REFERENCES

- [R Code](#)
- [MSBDSA Project - Qrious Insights – documentation](#)
- <https://qriousinsight.com/>
- <https://www.bigcommerce.com/articles/ecommerce/conversion-rate-optimization/>

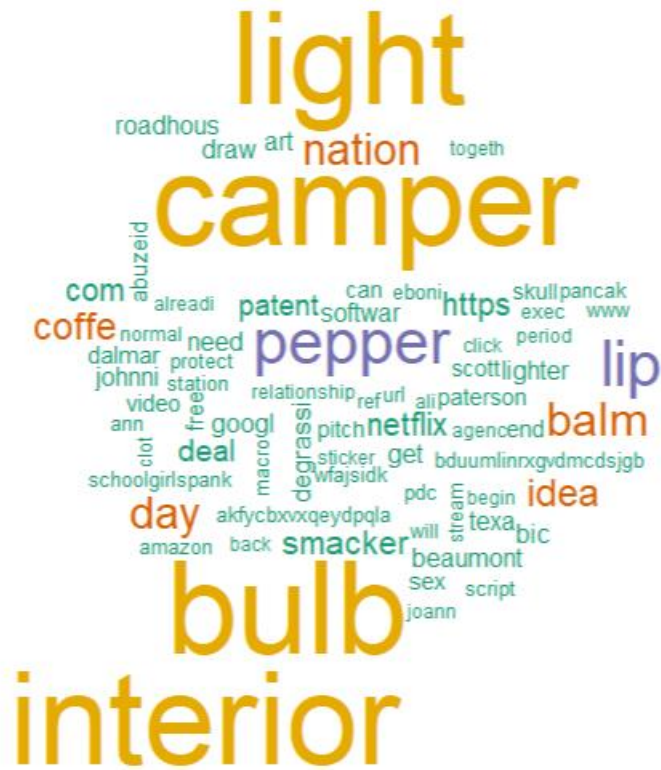


APPENDIX

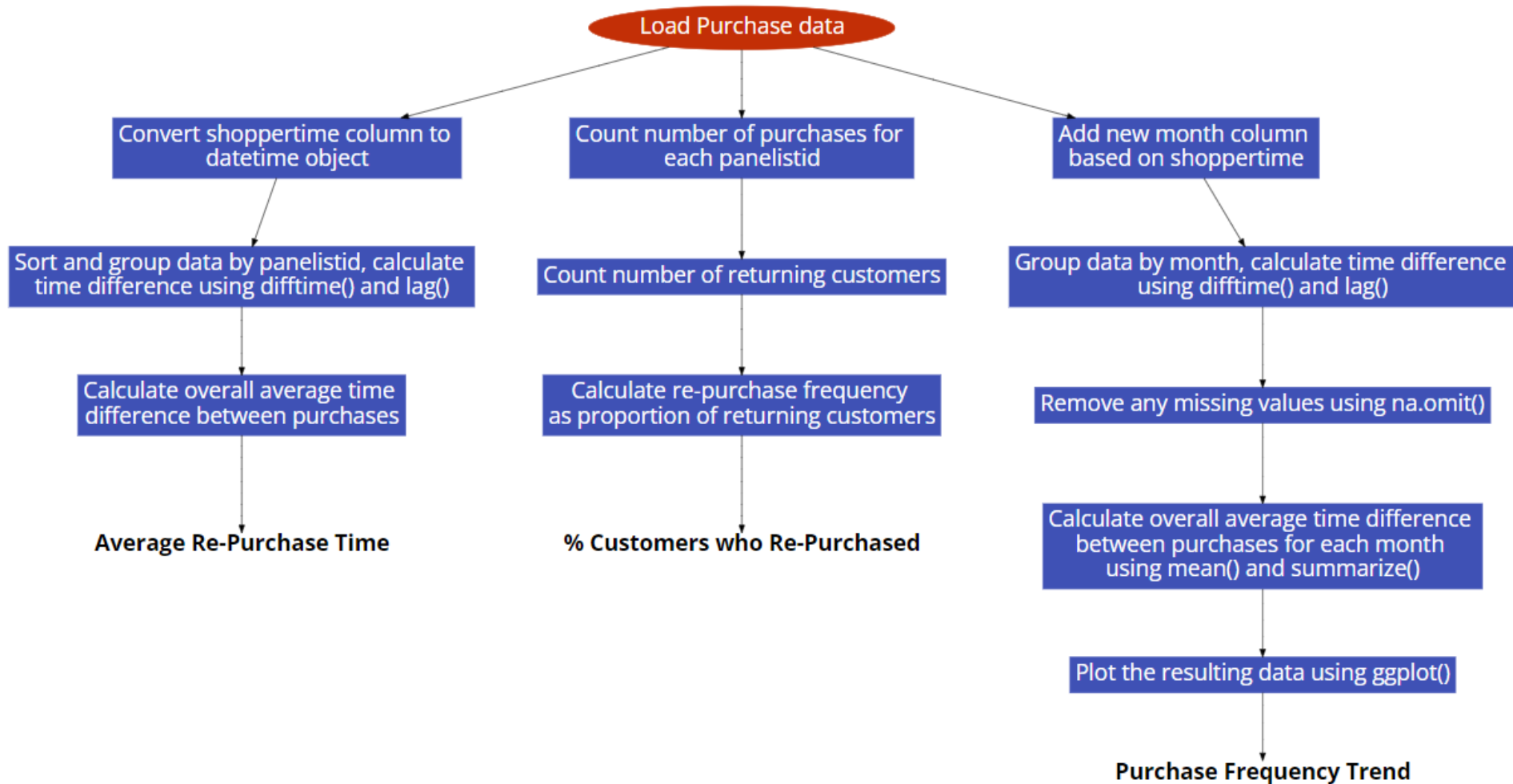
Activity on Media (6 hrs before purchase)



Web Search textual analysis



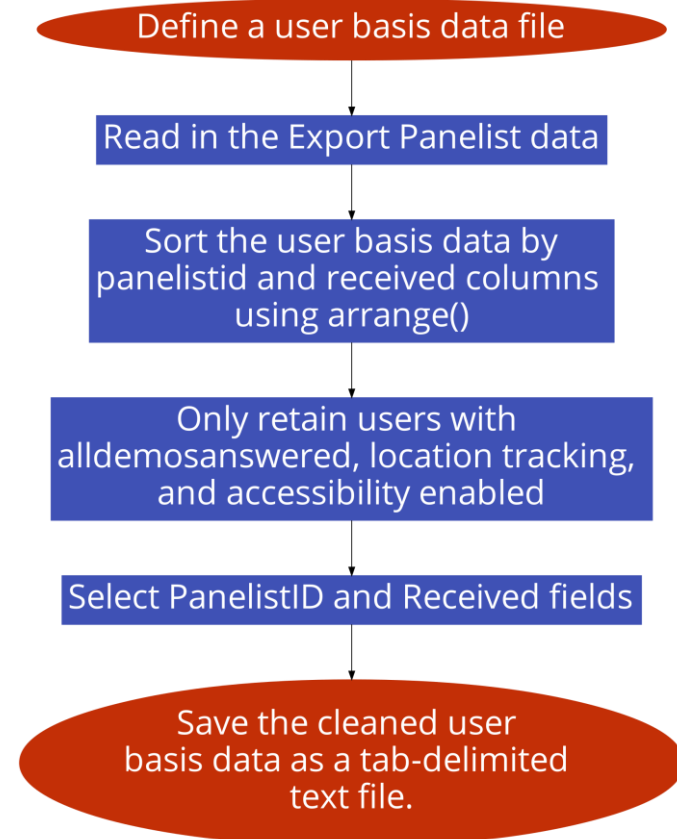
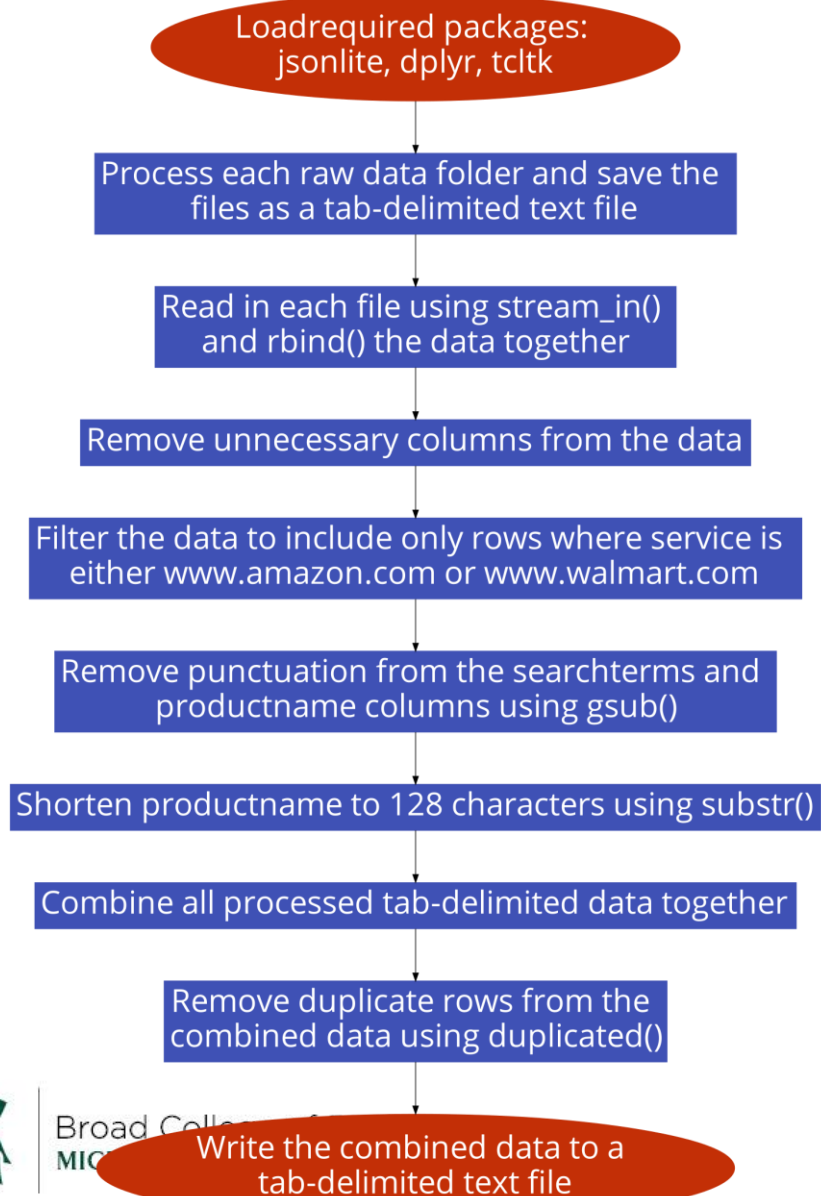
Process for Purchase Frequency Analysis



Process for Search term textual analysis



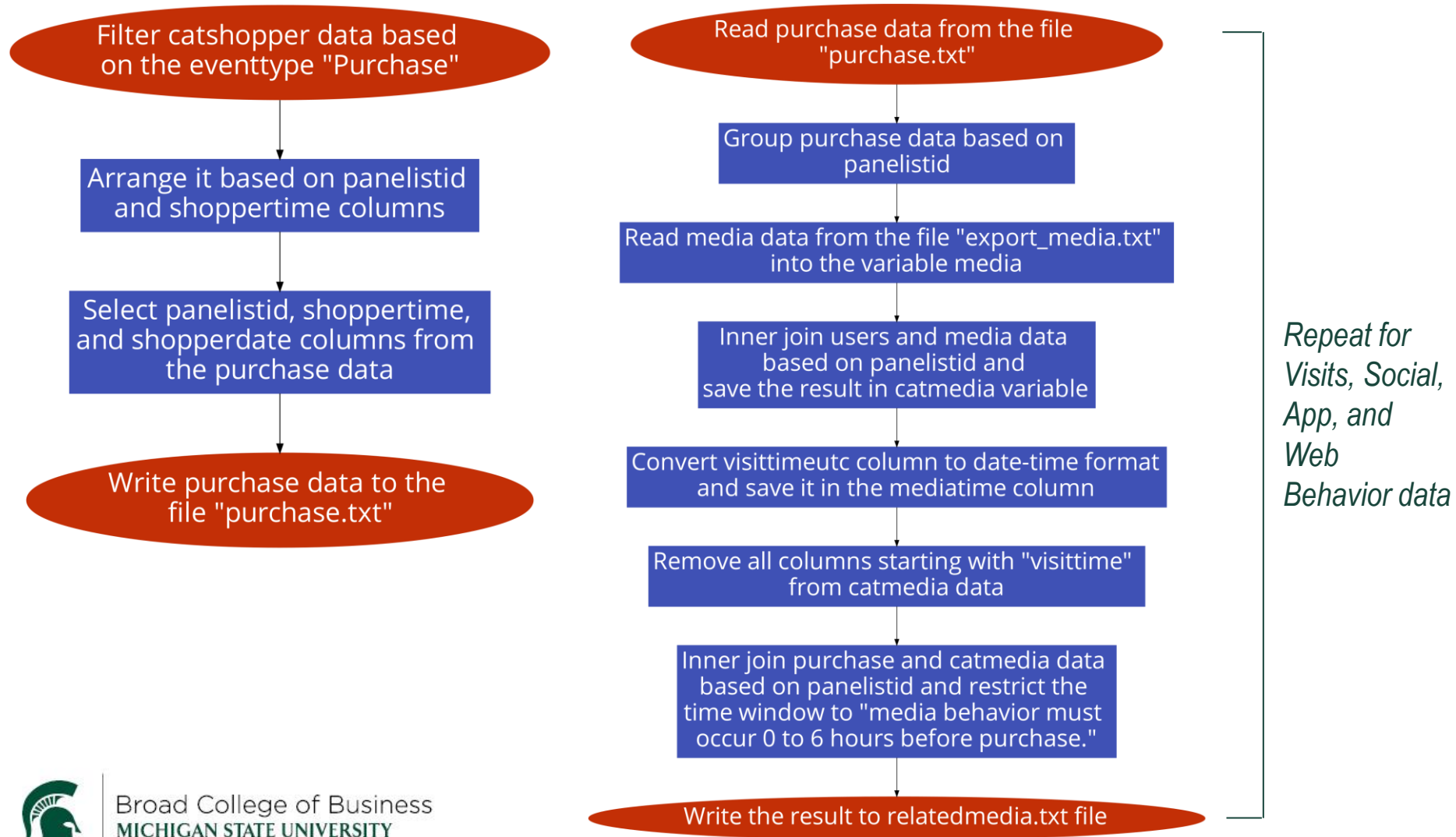
Process for Data Cleaning



Data Processing for Analysis – Shopper data



Data Processing for Analysis – Purchase and Related data



Data Processing for Analysis – Electronics % Share



Data Processing for Analysis – Top Products Insight



Data Processing for Analysis – Purchase Journey

Read in the "export_shopper.txt" data file as a data frame and assign it to "shopper_data"

Load the "dplyr" library

Read in the "catshopper.txt" data file as a data frame and assign it to "data"

Group the data frame by "panelistid" and arrange by "shoppertime"

Summarize the data by creating a new column called "sequence" that concatenates all the "eventtype" values for each "panelistid" and separate them with a "

" symbol, and assign the result to "sequences"

Group the summarized data frame by "sequence" and count the occurrences of each "sequence" value, and assign the result to "sequence_counts"

Sort the "sequence_counts" data frame by count in descending order and assign the result to "top_sequences"

Write the "top_sequences" data frame to a new text file called "purchase_journey(all).txt"

Read in the "export_shopper.txt" data file as a data frame and assign it to "shopper_data"

Load the "dplyr" library

Read in the "catshopper.txt" data file as a data frame and assign it to "data"

Group the data frame by "panelistid" and arrange by "shoppertime"

Filter the "sequences" data frame to only include rows that contain the word "Purchase" in the "sequence" column, and assign the result to "sequences"

Group the "sequences" data frame by "sequence" and count the occurrences of each "sequence" value, and assign the result to "sequence_counts"

Sort the "sequence_counts" data frame by count in descending order and assign the result to "top_sequences"

Write the "top_sequences" data frame to a new text file called "journey_to_purchase.txt"



Data Processing for Analysis – Co-Purchase Trend

